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EXAMINER	
LEUNG, CHRISTINA Y	
ART UNIT	**PAPER NUMBER**
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/536,020	ASWOOD SMITH, PETER	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' submission filed on 28 September 2004 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claim 13 is rejected under 35 U.S.C. 102(e) as being anticipated by Dantu et al. (US 6,532,088 B1).

Regarding claim 13, Dantu et al. disclose a network communication system comprising a source node and a sink node coupled by an intermediate node (Figure 3), the network communications system comprising:

means for defining a datapath between the source node and the sink nodes (such as nodes 300 and 316, respectively), the datapath being represented as a sequence of labels, each label identifying a portion of the datapath between a pair of nodes in the datapath, and each label also including a value of communication attribute of the portion of the datapath identified by the label, the communication attribute selected from a group consisting of wavelength, frequency,

shim, and time slot, and wherein a wavelength field in each label is used for storing the value of the communication attribute for the portion of the datapath identified by the label (column 8, lines 48-51; column 11, lines 24-39; column 13, lines 62-67; column 14, lines 1-4).

Dantu et al. specifically disclose labels identifying paths between nodes, wherein the labels include information such as carrier frequency (also known as wavelength) and a timeslot (column 11, lines 34-39). Therefore, each label in the system disclosed by Dantu et al. has a "wavelength field" that provides information about the carrier frequency/wavelength of the path.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 2, 6, and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dantu et al. in view of Ohba et al. (US 6,501,754 B1).

Regarding claim 1, Dantu et al. disclose a label switching routing method for multi-protocol labels switching (MPLS) optical communications network (Figure 3), comprising:

establishing a datapath as a sequence of labels between a source (such as node 300) and a sink (such as node 316) in the optical communications network, wherein each label includes a wavelength field storing a value of a wavelength frequency to be used for communication over a corresponding portion of the datapath associated with the label (column 8, lines 48-51; column 11, lines 24-39; column 13, lines 62-67; column 14, lines 1-4).

Again, Dantu et al. specifically disclose that the labels include information such as carrier frequency (also known as wavelength; column 11, lines 34-39). Therefore, each label in the system disclosed by Dantu et al. has a "wavelength field" that provides information about the carrier frequency/wavelength of the path.

Dantu et al. further disclose converting a first wavelength field of a first label to a second wavelength field of a second label (the labels are used to determine the new wavelength that a signal is converted to as it is routed, so one label having information about the first wavelength is switched for another label having information about the next wavelength in the path; column 13, lines 62-67; column 14, lines 1-4), and they disclose forwarding the traffic to the sink according to the datapath, including updating the sequence of labels to replace the first label with the second label (column 14, lines 46-53).

Dantu et al. do not specifically teach transmitting the second wavelength label to the source. However, Ohba et al. teach that in network utilizing label switching, the label may be transmitted back to a source node to indicate that the transmission to the next node was successful (column 8, lines 41-67; column 9, lines 1-67; column 10, lines 1-25). It would have been obvious to a person of ordinary skill in the art to transmit the label to the source as taught by Ohba et al. in the method disclosed by Dantu et al. in order to provide feedback to the source and promptly detect failures in the network. One in the art also would have been motivated to transmit the label back to the source as taught by Ohba et al. in the method disclosed by Dantu et al. in order to quickly detect and correct situations in which the signal is undesirably routed through a looping path (Ohba et al., column 4, lines 22-53).

Regarding claim 2, Dantu et al. further disclose each label further includes a timeslot field storing a time value indicating one of a plurality of timeslots to be used for communication over the corresponding portion of the datapath associated with the label (column 13, lines 62-67; column 14, lines 1-4).

Regarding claim 6, Dantu et al. disclose that the step of establishing a datapath is controlled by the multi-protocol label switching (MPLS) protocol (column 8, lines 48-51).

Regarding claim 8, Dantu et al. disclose an optical time cross-connect (OTXC) for providing wavelength to wavelength conversion in a multi-protocol label switching (MPLS) optical communications network (Figure 3), comprising:

means for providing a first label having a wavelength field for storing a value of a first wavelength frequency to be used for communication over a corresponding portion of a datapath associated with the label (column 8, lines 48-51; column 11, lines 24-39; column 13, lines 62-67; column 14, lines 1-4);

means for converting the value of the first wavelength frequency associated with an incoming signal of the OTXC into a value of a second wavelength frequency associated with an outgoing signal of the OTXC (the labels are used to determine the new wavelength a signal is converted to as it is routed, so one label having information about the first wavelength is switched for another label having information about the next wavelength in the path; column 13, lines 62-67; column 14, lines 1-4);

means for updating a label associated with a communication path of the incoming signal to provide the value of the second wavelength frequency in the wavelength field of the label (column 14, lines 46-53).

Again, Dantu et al. specifically disclose that the labels include information such as carrier frequency (also known as wavelength; column 11, lines 34-39). Therefore, each label in the system disclosed by Dantu et al. has a "wavelength field" that provides information about the carrier frequency/wavelength of the path.

As similarly discussed above with regard to claim 1, Dantu et al. do not specifically disclose means for forwarding the updated label to the source. However, Ohba et al. teach that in network utilizing label switching, the label may be forwarded to a source node to indicate that the transmission to the next node was successful (column 8, lines 41-67; column 9, lines 1-67; column 10, lines 1-25). It would have been obvious to a person of ordinary skill in the art to provide means for transmitting the label to the source as taught by Ohba et al. in the system disclosed by Dantu et al. in order to provide feedback to the source and promptly detect failures in the network. One in the art also would have been motivated to transmit the label back to the source as taught by Ohba et al. in the system disclosed by Dantu et al. in order to quickly detect and correct situations in which the signal is undesirably routed through a looping path (Ohba et al., column 4, lines 22-53).

Regarding claim 9, Dantu et al. disclose that the means for converting are controlled by the multi-protocol label switching (MPLS) protocol (column 8, lines 48-51).

Regarding claim 10, Dantu et al. disclose means for providing time division multiplexing under the control of the MPLS protocol (column 3, lines 26-28) and also disclose wavelength division multiplexing (Dantu et al. disclose that the signals are transmitted on various carrier frequencies/wavelengths; column 13, lines 8-22) but do not explicitly further disclose statistical multiplexing. However, it is common knowledge that the capacity of an optical network may be

expanded by multiplexing the optical signals. It would have been obvious to a person of ordinary skill in the art to include further multiplexing means for providing statistical multiplexing in the system suggested by Dantu et al. in view of Ohba et al. in order to further expand the capacity of the network. Again, Dantu et al. already generally disclose multiplexing, and one in the art would have been motivated to provide further multiplexing means in order to maximize the efficiency of the communications over the existing hardware and fiber.

Regarding claim 11, Dantu et al. disclose that the system includes means for routing a signal back to the source, since signals travel between nodes in various directions and may return to a "source" node. Dantu et al. further disclose assigning timeslots to route a signal back to the source or to any other next-destination node (column 13, lines 62-67; column 14, lines 1-4), and therefore, they disclose means for assigning timeslots for a wavelength flowing back to the source.

6. Claims 3-5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dantu et a. in view of Ohba et al. as applied to claims 2 and 11 above, and further in view of Taylor (US 5,938,309 A).

Regarding claims 3 and 12, Dantu et al. in view of Ohba et al. describe a method and system as discussed above with regard to claims 2 and 11, respectively. Dantu et al. disclose timeslots (column 13, lines 62-67; column 14, lines 1-4) but do not specifically disclose that the plurality of timeslots are of variable size.

However, multiplexing in the time domain, wherein multiple data signals are combined by dividing each signal into timeslots of a shared datapath, is already well known in the art, and it is also well known in the art that different time division multiplexing protocols may involve

timeslots of different sizes in accordance with the speed of the optical carriers. Furthermore, Taylor in particular teaches that signals in an optical network may have different bit rates and therefore, timeslots of variable sizes in accordance with the speed of the signal (column 3, lines 29-62). Regarding claims 3 and 12, it would have been obvious to a person of ordinary skill in the art to have timeslots with variable sizes as taught by Taylor, in the method suggested by Dantu et al. in view of Ohba et al., in order to properly allow the network to accommodate signals having different bit rates. One in the art would have motivated to accommodate signals having different bit rates (i.e., differently sized timeslots) as taught by Taylor in order to provide compatibility between signals of different protocols in a large network and to more efficiently utilize the capacity of optical channels when necessary (Taylor, column 1, lines 51-67; column 2, lines 1-11).

Regarding claims 4 and 5, Dantu et al. in view of Ohba et al. describe a method and system as discussed above with regard to claim 2. Dantu et al. do not specifically teach splitting a label or combining two labels, although, again, Dantu et al. do disclose that the labels may include timeslots.

However, Taylor further teaches that signals with different bit rates may be converted so that they are compatible with other signals in a particular part of the network. In particular, Taylor teaches that a signal may be split into multiple outgoing signals and that multiple signals may be combined into one signal (Figure 1 shows a signal from an OC-192 transmitter, for example, being split into four corresponding OC-48 signals, and conversely, four OC-12 signals being combined into one OC-48 signal). Regarding claims 4 and 5, it would have been obvious to a person of ordinary skill in the art to further include splitting or combining the labels as

taught by Taylor in the method suggested by Dantu et al. in view of Ohba et al. in order to properly accommodate signals of different bit rates in the network by making them compatible with each other as necessary. Again, one in the art would have motivated to accommodate signals having different bit rates (i.e., differently sized timeslots) as taught by Taylor in order to provide compatibility between signals of different protocols in a large network and to more efficiently utilize the capacity of optical channels when necessary (Taylor, column 1, lines 51-67; column 2, lines 1-11).

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dantu et al. in view of Ohba et al. as applied to claim 6 above, and further in view of Lee (US 6,556,544 B1).

Regarding claim 7, Dantu et al. in view of Ohba et al. suggest a method as discussed above with regard to claim 6 above. Dantu et al. further disclose providing time division multiplexing (column 3, lines 26-28) and wavelength division multiplexing (Dantu et al. disclose that the signals are transmitted on various carrier frequencies/wavelengths; column 13, lines 8-22) but do not explicitly further disclose statistical multiplexing. However, it is common knowledge that the capacity of an optical network may be expanded by multiplexing the optical signals. It would have been obvious to a person of ordinary skill in the art to include further multiplexing means for providing statistical multiplexing in the system suggested by Dantu et al. in view of Ohba et al. in order to further expand the capacity of the network. Again, Dantu et al. already generally disclose multiplexing, and one in the art would have been motivated to provide further multiplexing means in order to maximize the efficiency of the communications over the existing hardware and fiber.

Further regarding claim 7, Dantu et al. do not specifically disclose a constrained routing label distribution protocol, but such a protocol is known in the art as a choice of a service resource allocation protocol, as Lee et al. teach (column 1, line 58-65). It also would have been obvious to a person of ordinary skill in the art to provide the multiplexing under the control of a constrained routing label distribution protocol as taught by Lee et al. in order to properly incorporate and control the multiplexed signals in the MPLS protocols already suggested by Dantu et al. in view of Ohba et al. One in the art would have been motivated to include CR-LDP as taught by Lee et al. in order to effectively manage the multiple signals already suggested by Dantu et al. in view of Ohba et al. between the limited number of nodes and paths in the network (Lee et al., column 1, lines 37-55).

Response to Arguments

8. Applicants' arguments filed 28 September 2004 have been fully considered but they are not persuasive.

Regarding claims 1-13, Examiner respectfully disagrees with Applicants assertion on page 8 of their response that Dantu et al. "teach[es] away from any system or method for label switching based on labels that include values of communication attributes." Applicants acknowledge on page 7 of their response that "Dantu et al. disclose using labels that identify logical channels on which packets are conveyed." However, Examiner respectfully notes that these logical channels in the system disclosed by Dantu et al. are wavelength and timeslot channels that are, necessarily, characterized by wavelength and timeslot attributes and would therefore be referenced by labels that identify the wavelength and timeslot of the particular channels. The labels disclosed by Dantu et al. contain information that identify the carrier

frequency (in other words, wavelength) and timeslot of the paths between nodes (column 11, lines 34-39), and therefore, Dantu et al. do disclose labels including communication attributes.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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